

DUREESIC, Ivo, inz. (Zagreb)

Use of reversible rectifiers in rolling-mill drives. Avtomatika
3 no.4:243-248 Ag '62.

DURBESIC, Ivo, inz.

"Collected papers of the Yugoslav Seminar on Regulation,
Measurements, and Automation, 1963," ed. by (inz.) Marijan
Brezinscak. Vol. 2. Reviewed by Ivo Durbesic. Telekomunikacije
12 no.4:31 0 '63

DURBESIC, Ivo, inz.

"Collected works of the Yugoslav Seminar on Regulation, Measurements,
and Automation, 1963," ed. by [inz.] Marijan Brezinscak. Vol. 2.
Reviewed by Ivo Durbesic. Kem ind 12 no.12:945-946 D '63.

DURBESIC, Ml., inz.

Application of the electric-arc and air method in welding
root seams. Zavarivac 8 no. 3:2-15 '63.

1. Steam Boiler Plant, Zagreb.

STANDARD AND CODES																										PROCESSES AND PROPERTIES INDEX																										TEMP AND STIM FACTORS																									
STANDARD AND CODES																										PROCESSES AND PROPERTIES INDEX																										TEMP AND STIM FACTORS																									
13855* Laws Governing Rate of Solution of Metals in Concentrated Acids. I. (In Russian.) Ya. V. Dvulin. Zhurnal Obshchei Khimii, v. 21(81), May 1951, p. 801-808.																																																																													
The cause of a maximum on the rate vs. concentration curves for metals in concentrated acids is discussed, and lack of connection with the maximum on electroconductivity vs. concentration curves is shown. Solution of Cr in HCl was studied as an example. Reactions at the metal surface at different concentrations were found to be determining factors in rate of solution. 15 ref.																																																																													
A50-31A METALLURGICAL LITERATURE CLASSIFICATION																																																																													
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Proceedings of Brown White Y. Garofano
of 12 21 1960 in Green
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DURCANSKY, Vladimir, inz., CSc.; PELZL, Rudolf

Electrothermic production of aluminum alloys, in particular
silumin in Czechoslovakia. Pt. 1. Hut listy 18 no.6:416-424
Je '63.

1. Vyzkumny ustav kovu, Panenske Brezany.

DURCANSKY, Vlad., inz., CSc.; PELZL, Rudolf

Electrothermic production of aluminum alloys, in particular
silumin in Czechoslovakia. Pt.2. Hut listy 18 no.7:489-499
Jl '63.

1. Vyzkumny ustav kovu, Panenske Brezany.

L 7676-66 EWP(t)/EWP(b) LJP(c) JD
ACC NR: AP6001280 SOURCE CODE: CZ/0057/65/000/002/0083/0087
AUTHOR: Durcansky, Vladimir (Candidate of sciences; Engineer)
ORG: Research Institute for Metals, Panenske Brezany (Vyzkumny ustav kovu)
TITLE: Question of aluminum production from domestic raw materials
SOURCE: Hutnik, no. 2, 1965, 83-87
TOPIC TAGS: aluminum, aluminum alloy
ABSTRACT: Various methods of producing aluminum are reviewed. The various raw materials occurring in Czechoslovakia are discussed. Minerals and the analysis, and amounts available are listed. Fly ash from electric power stations is evaluated as raw material for aluminum production. Methods that can be used with the available minerals are described. There is no bauxite that could be considered as raw material. Possible yields from different ores are compared; direct production of aluminum and of some of its alloys is discussed. Necessary sources of energy for aluminum production are discussed. Possible reduction in the consumption of aluminum is considered. Orig. art. has: 3 figures. [JPRS]
SUB CODE: 11 / SUBM DATE: none / ORIG REF: 007 / OTH REF: 001
Card 1/1

9.3150
9.9600

Z/037/60/000/005/017/056
E192/E382

AUTHOR: Durček, J.

TITLE: Radiospectropic Investigation of Electrical Discharges in Gases

PERIODICAL: Československý časopis pro fysiku, 1960,
No. 5, p. 409

TEXT: The work was concerned with the investigation of electrical gas discharges when the discharge was placed in a strong magnetic field. The method of investigation was based on the selective absorption of microwaves in the discharges. The conditions under which this selective absorption occurs were investigated and it is shown that on the basis of the kinetic theory or quantum-mechanical theory it is possible to determine the relationship between the shape of the absorption lines and some of the discharge parameters. The absorption and dispersion curves were investigated. The theoretical results were verified on a device operating at the 3 cm wavelength by using the method of the electron paramagnetic resonance. The absorption and dispersion curves were measured at various pressures and
Card 1/2

✓B

Z/037/60/000/005/017/056
E192/E382

Radiospectroscopic Investigation of Electrical Discharges
in Gases

currents for various gas fillings in the discharge tubes.

ASSOCIATION: Prírodovedecká fakulta Univerzity Komenského
v Bratislave (Natural Science Faculty of
Komenský University, Bratislava)

✓B

Card 2/2

4528
Z/037/62/000/005-6/018/049
E192/E382

26.2311

AUTHOR: Durček, J.

TITLE: Cyclotron electron resonance in a unidirectional discharge in helium and argon

PERIODICAL: Ceskoslovensky časopis pro fysiku, ^{Vol. 12} no. 5-6, 1962, 557 - 560

TEXT: The effect was investigated experimentally by means of a discharge tube 5 mm in diameter and 6 cm long, situated in a rectangular cavity resonator in the position of the maximum electric field. The axis of the tube was parallel to the wider wall of the waveguide and perpendicular to its axis. A magnetic field produced by an electromagnet was directed along the axis of the tube. The high-frequency field for the TE₁₀₃ mode was therefore perpendicular to the magnetic field. The intensity of the magnetic field in the gap could be varied up to 6 000 G with an error of 1%. The conductivity of the discharge was measured by a probe attached to the coupling plane of the resonator. The relationship between the measured conductivity and the actual conductivity of the discharge was determined by Card 1/3

Cyclotron electron resonance

Z/037/62/000/005-6/018/049
E192/E382

the Rose-Brown method (J. Appl. Phys., 23, 711, 1952). The conductivity in the vicinity of the resonance was measured as a function of the magnetic field for a given pressure and current flow through the tube. The measurements were carried out at 9 350 Mc/s and a stabilized reflex klystron was used as a high-frequency source. The results of measurements of the real component of the conductivity in the coupling plane as a function of the magnetic field for a pressure of 1.7 mm Hg are shown in Fig. 1, where the circles denote the measurements for a current of 60 μ A, triangles show the points taken at 80 μ A and crosses relate to currents of 100 μ A. The width of the magnetic-field line ΔH as a function of pressure was measured for both helium and argon. It was found that ΔH was a linear function of pressure for $p > 2$ mm Hg; below this value ΔH is constant. The measurements are in good agreement with the theory for pressures above 2 mm Hg. There are 3 figures. ✓

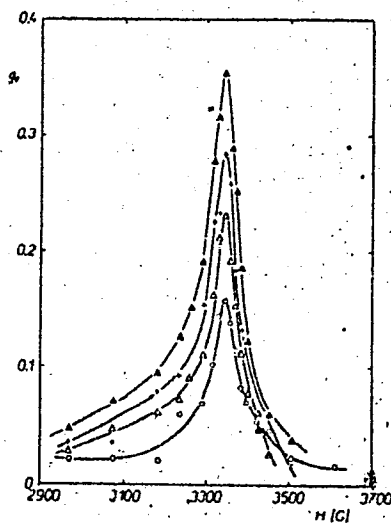
ASSOCIATION: Katedra fyziky Vysokej školy dopravnej, Žilina
(Department of Physics of the Transport University,
Žilina)

Card 2/3

Cyclotron electron resonance

Z/037/62/000/005-6/018/049
E192/E382

Fig. 1:



Card 3/3

Z/037/62/000/005-6/047/049
E140/E520

AUTHORS: Đurček, J. and Tirpák, A.

TITLE: 3 cm Directional coupler using cyclotron resonance
in a gas discharge

PERIODICAL: Československý časopis pro fysiku, no.5-6, 1962,
720-722

TEXT: A gas-discharge tube in a magnetic field parallel
to the wide side of a rectangular waveguide gives a directional
effect of the order of 15 - 30 dB. The effect may be utilised
for control and modulation purposes. There are 3 figures. ✓

ASSOCIATIONS: Katedra fyziky Vyzokej školy dopravnej, Žilina
(Physics Department of the High School of Transport,
Žilina) (Đurček)
Katedra exper. fyziky Přírodovedeckej fakulty
Univerzity Komenského, Bratislava
(Department of Experimental Physics, Faculty of
Natural Sciences, Komensky University, Bratislava)
(Tirpák)

Card 1/1

MINARIK, F.; DUROEK, K.; MINARIK, A.

The problem of dispersed radiations near diagnostic x-ray apparatus.
Pracovni lek. 10 no.2:141-144 May 58.

1. Ustav hygieny prace a chorob z povolania, Bratislava, riaditel MUDr.
Imrich Klucik, F.M. Bratislava, ul. 29. Augusta 8.

(ROENTGEN RAYS, injurious effects

hazards in vicinity of diag. x-ray equip. (Cz))

(ROENTGENOGRAPHY,

same)

KLUVANEK, P.; DURCEK, K.; MASARYK, S.; MINARIK, F.; za tech.spoluprace
URICKA, L.; DOUPOVCA, V.

Effect of technical shortcomings of roentgeno-diagnostic equipment
on spreading of secondary radiations. Cesk.rentg. 15 no.1:30-36
F '61.

1. Ustav hygieny prace a chorob z povolania v Bratislave, riaditel
MUDr. I. Klucik.
(RADIATION PROTECTION)

DURCEK, KAROL

SURNAME, Given Names

Country: Czechoslovakia

Academic Degrees: [not given]

Affiliation: Institute of Work Hygiene and Occupational Diseases (Ustav
hygieny prace a chorob z povolania), Bratislava

Source: Bratislava, Matematicko-Fyzikalny Casopis, Vol 11, No 3,
1961, pp 214-221

Data: "Contribution to a Method of Absolute Dosimetry of Sr⁹⁰."

Authors:

STANKOVICOVA, Alojzia

MINARIK, Frantisek

DURCEK, Karol

670 981643

STANKOVICOVA, Alojzia (Bratislava, ul. Narodneho povstania c. 18-20);
MINARIK, Frantisek (Bratislava, ul. Narodneho povstania c. 18-20);
DURCEK, Karol (Bratislava, ul. Narodneho povstania c. 18-20)

Methods of absolute dosimetry of Sr^{90} . Mat fyz cas SAV 11
no.3:214-221 '61.

1. Ustav hygieny prace a chorob z povolania, Bratislava.

CZECHOSLOVAKIA

DURCO, J; MD; MALEC, I; OMANIK, S., MD.

1. Surgical Ward OUNZ (Chirurgicki oddelenie OUNZ),
Trencina (for Omanik); 2. X-Ray Ward OUNZ (Rontgeno-
logicki oddelenie OUNZ), Trencina (for Durco)

Bratislava, Lekarsky obzor, No 6, 1963, pp 343-347

"Mesenterial Cysts."

DURCZAK, Witold (Warszawa)

Utilization of the fundamental building machinery in the construction
and building materials industry. Przegl budowl i bud mieszk
34 no.8:474-477 Ag '62.

DURCZEWSKI, D.

DURCZEWSKI, D.

"Hygiene of our forebears." p. 16. (ZDROWIE Vol. 7, No. 1, 1955.
Warszawa, Poland)

SO: Monthly List of East European Accession. (EEAL). LC. Vol. 4. No. 4.
April 1955. Uncl.

DURDENEVSKAYA, M.V. (Moskva)

Eminent Russian metallurgist; the 100th anniversary of the birth of V.
E. Grum-Grzhimailo. Priroda 53 no.4:113-115 '64. (MIRA 17:4)

DURDENEVSKIY, V., doktor yurid.nauk, prof.; KOLODKIN, A., kand.yurid.nauk

"International maritime law" by L.A. Ivanashchenko.
Reviewed by Y. Durdenevskii, A. Kolodkin. Mor. flot
22 no.9:45-46 S '62. (MIRA 15:12)
(Maritime law)
(Ivanashchenko, L.A.)

DURDENIC, Velimir.

Automatic regulation of the MTC furnace for the production of carbon black. Nafta Jug 12 no.3/4:97-100 Mr-Ap '61.

1. Institut za naftu, Zagreb.

SUSIC, Milenko, V.; DURDEVIC, Desanka Z.

Potentiometric and conductometric determination of selenium and arsenic. Gl hem dr 23/24 no.5/6:297-304 '58/59. (EEAI 10:4)

1. Faculty of Sciences, Institute of Physical Chemistry, Beograd.
(Selenium) (Arsenic) (Conductometric analysis)
(Potentiometer)

SUSIC, Milenko V.; DURDEVIC, Desanka Z.

Separation of selenium, tellurium, and arsenic on the ion exchangers.
Gl hem dr 23/24 no.5/6:313-320 '58/59. (EEAI 10:4)

1. Fakultety of Sciences, Institute of Physical Chemistry, Beograd.
(Selenium) (Tellurium) (Arsenic)
(Ion exchange) (Gums and resins, Synthetic)
(Dowex 1)

DURDEVIC, D.; JOVANOVIĆ, M.

Some of our experiences pertaining to the marking of albumens
with radioactive iodine. Bul se Youg 7 no.1/2:13 F-Ap '62.

1. Fizioloski institut Veterinarskog fakulteta, Beograd.

*

DURDEVIC, J.

"Taras; regional-geographical survey. p. 144, (ZEMNIK. SERIJA RIROBNTH
NAUKA, Vol. 9, No. 4, 1953, Nova Sad, Yugoslavia)

SO: Monthly List of East European Accessions, (EEAL), LC, Vol. 4, No. 4,
1 Apr 1955, Uncl.

DURDEVIC, J.

Three main cities in Vojvodina and their major functions. p. 168.

CROATICA CHEMICA ACTA (Hrvatsko kemijsko drustvo, Svuciliste u Zagrebu i Hrvatsko prirodoslovno drustvo) Zagreb, Yugoslavia, Vol. 7, no. 14, 1958

Monthly list of East European Accessions (EEAI) LC, Vol. 8, no. 8, Aug. 1959

Uncl.

DURDEVIC, Jelica

"Proceedings of the 5th Congress of the Geographers of
Yugoslavia, held in Montenegro September 8-16, 1958."
Reviewed by Jelica Durdevic. Zbor prir Mat srp no.19:203
'60.

ANDELKOVSKI, Anđelko, dr., prim.; LAKIĆ, Milan; DURĐEVIĆ, Ljubomir;
TODOROVIC, Dusan

Sodoku. Srpski arh. celok. lek. 89 no.7/8:679-681 JI-Ag '61.

1. Interno odeljenje Opšte bolnice u Pancevu. Šef: prim. dr Anđelko
Anđelkovski.

(RAT BITE FEVER case reports)

SAVIC, S.; DURDEVIC, V.; NOVAKOVIC, N.; ANASTASIJEVIC, R.

Contribution to the study of respiratory function in trained and untrained children during standard exercise. Acta med. Jugosl. 18 no.3:169-173 '64.

1. Odelenje za fiziološko-medicinska ispitivanja Jugoslovenskog zavoda za fizičku kulturu u Beogradu.

DURDEVIC, Vukasin (Backo Gradiste)

Contradictions in the textbooks of geography and history. Geogr
hor 9 no.3:41-45. '63.

NOVAROVIC, M.; ANASTASIJEVIC, R.; SAVIC, B.; FURDEVIC, V.

Heart volume, physical efficiency and their relations in leading Yugoslavian athletes in various fields. Acta med. Jugosl. 18 no.2:107-120 '64

1. Odeljenje za medicinsko-fizioloska ispitivanja Jugoslavenskog zavoda za fizicku kulturu u Beogradu.

DURDEVIC, Z.

"Submerged pumps, depth pumps of the future." p. 59. (ZELEZNICE, Vol. 9, no. 2, Feb. 1953, Beograd.)

DURDEVIC, Z.

New method of supplying water for locomotives. p. 113. ZELENICE.
Vol. 11, No. 3, March, 1955. Belgrad.

SOURCE: East European Accessions List, (EEAL) Library of Congress,
Vol. 4, No. 12, Dec. 1955.

DURDIK, F.

Czechoslovakia/Chemical Technology - Chemical Products and Their Application.
Carbohydrates and Refinement, I-26

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 63509

Author: Burianek, J., Durdik, F.

Institution: None

Title: Polarographic Determination of Calcium in Sugar Juices

Original

Periodical: Polarograficke stanoveni vapniku v cukernych stavach. Listy
cukrovarn., 1954, 70, No 10, 228-229; Czech; Russian resumé

Abstract: The method is based on displacement by Ca ions of Zn ions in a solution of Zn-complexionate. In a 10 ml measuring flask are placed 2 ml of saturation juice, there are added 3 ml 0.01 M Zn-complexionate, 4 ml concentrated ammonia, and the flask is filled to the mark with 0.5% solution of gelatin. After mixing polarographic determination is carried out immediately from -0.8 to -1.2 v at a sensitivity of $\sim 1/150$. Polarography under analogous conditions of various amounts of 0.01 M CaCl_2 , in which the concentration is determined exactly by

Card 1/2

Czechoslovakia/Chemical Technology - Chemical Products and Their Application.
Carbohydrates and Refinement, I-26

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 63509

Abstract: the volumetric method, yields a calibration curve of comparison. With a concentration of Ca, in the juice, above 0.01 M, one ml of the juice is taken. 0.01 M Zn-complexionate is prepared by mixing a 0.01 M solution of $Zn(NO_3)_2$ with a slightly less than equivalent amount of 0.1 M complexion, in such a manner that the solution contains a small amount of free ions. 0.1 M complexion is prepared by mixing 29.21 g ethylenediaminetetracetic into 200 ml 1 N NaOH and diluting thereafter to one l, or dissolving 37.2 g of the sodium salt of the above-stated compound in one l water. On comparison of the polarographic method with the volumetric satisfactory results were obtained.

Card 2/2

Durdik

CZECHOSLOVAKIA/Forestry - Biology and Forest Typology.

J-2

Abs Jour : Referat Zhur - Biologiya, No 16, 25 Aug 1957, 69086
Author : Durdik
Inst :
Title : Growth Conditions in Shumava and Poshumava in Vicinity of
Kashpersky Mountains.
Orig Pub : Casop. Narodn. musea, Odd. prirodoved, 1955, 124, No 1,
9-22

Abstract : It is notable that as a result of forest cultivation the
primary character of forests is changed considerably:
in the district of Poshumava monocultures of pine prevail,
while in Shumava culture of fir is widely distributed, es-
pecially at lower levels, where the fundamental beech
growth disappears almost completely. The author divides
the given area into climatic-vegetative districts, which
are characterized by the following vegetative groupings:
1) region of Quercus-Carpinion-- Arrhenatherion;

Card 1/2

- 11 -

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APPROVED FOR RELEASE: 08/25/2000

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DURDIK, FRANTISEK

CZECHOSLOVAKIA/Chemical Technology. Chemical Products
and Their Application, Part 3. - Carbohydrates
and Their Treatment.

H

Abs Jour: Referat. Zhurnal Khimiya, No 21, 1958, 72151.

Author : Josef Buriánek, Frantisek Durdik.

Inst :

Title : Upon the Theory of Last Saturation. Part III.
Treatment of Juices after the Last Saturation.

Orig Pub: Listy cukrovarn., 1956, 72, No 7, 151-152.

Abstract: The optimum alkalinity, at which the minimum
precipitation of CaCO_3 in the evaporating appa-
ratus takes place, not always satisfies the require-
ments of the following treatment - darkening and
formation of reducing substances occur. If the
alkalinity was too high (which happens at a high

Card : 1/2

Durdik F.

Czechoslovakia /Chemical Technology. Chemical Products H-5
and Their Application
Water treatment. Sewage water.

Abs Jour: Referat Zhur - Khimiya, No 1, 1958, 1727

Author : Durdik F.

Title : Effect of a Magnetic Field on Scale Formation

Orig Pub: Listy cukrovarn., 1956, 72, No 12, 275

Abstract: Laboratory experiments have shown that evaporation of water in a magnetic field does not prevent scale formation and does not cause dissolution of the scale, but lowers the intensity of scale formation by about 10-20%

Card 1/1

DURDIK, FRANTISEK

CZECHOSLOVAKIA/Chemical Technology, Chemical Products and Their H-26
Application, Part 3. - Carbohydrates and Their
Treatment.

Abs Jour : Ref Zhur - Khimiya, No 14, 1958, 48359

Author : I - Josef Burianek, Frantisek Durdik, Karel Cihal; II -
Josef Burianek, Frantisek Durdik.

Inst : -

Title : Upon the Theory of Last Saturation. I. Application of
Warburg's Instrument to Last Saturation Control. II.
Deduction of Criterion of Minimum Formation of Calcium
Carbonate in Last Saturation Juice.

Orig Pub : Listy cukrovarn., 1957, 72, No 6, 133-135, 136-140.

Abstract : I. A method of determination of the amount of CO₂ bound
in the last saturation juice and of the concentration of
weak bases in the atmosphere of CO₂-gas was developed
using Warburg's instrument. The results of experiments
are shown in tables and graphs. A criterion for judging
the minimum formation of insoluble CaCO₃ in the last
saturation juice is established.

Card 1/2

CZECHOSLOVAKIA/Chemical Technology, Chemical Products and Their H-26
Application, Part 3. - Carbohydrates and Their
Treatment.

Abs Jour : Ref Zhur - Khimiya, No 14, 1958, 48359

II. It is shown theoretically and experimentally that there is at the last saturation such a juice basicity, at which CaCO_3 is forming in the least amount. The attainment of such basicity depends neither on the reaction equilibrium, nor on the temperature and density of the juice.

Card 2/2

DURDIK, M.

Effect of climate on humans in Bohemia from 1876 to 1925. p. 65
METEOROLOGICKE ZPRAVY. Vol. 6, No. 2, May 1953

CO: Monthly East European Accession (EEAL), LC, Vol. 4, No. 9, Sept. 1955 Uncl.

DURDIK, M.

Vegetation in the Bohemian Forest and in its foothills in the environs of ^Aasperske
Hory. p. 9

Vol. 124, no. 1, 1955
CASOPIS; ODDIL PRIRODOVEDNY
Praha, Czechoslovakia

So: Eastern European Accession Vol. 5, No. 4, 1956

DURDIK, P.

Vacuum pumps with rotating pistons in practical use. p. 256.

ELEKTROTECHNIK, Praha, Czechoslovakia, Vol. 14, no. 8, Aug. 1959.

Monthly list of East European Accessions, (EEAI) LC, Vol. 8, No. 10,
Oct. 1959
Uncl.

DURDIL, J.

"Twenty Weaned Suckling Pigs from One Sow in a Year." p. 13. "Recent Price and Economic Regulations." p. 14. "A Method for Speeding the Germination of Fruit Tree Seeds." p. 15. "New Purchase Prices for Sheared Wool of Domestic Origin." p. 15 (CESKOSLOVENSKE STATNI STATKY, Vol. 3, No. 14, April 1951) Praha, Czechoslovakia

SO: Monthly List of East European Accessions, Library of Congress, Vol. 3, No. 4, April 1954. Unclassified.

1ST AND 2ND COLUMNS										3RD AND 4TH COLUMNS									
PROCESSING AND PROPERTIES INDEX																			
<p><i>*The Border Effect in the Solution of Metallic Magnesium in Aqueous Solutions of Organic Acids. Ya. V. Durdin and A. M. Markevich (Zhurnal Obshchei Khimii (J. General Chem.), 1935, 5, 1690-1695; C. Abstr., 1936, 30, 3302).-- [In Russian.] When a piece of magnesium in contact with an insoluble solid such as paraffin is placed in aqueous HCN, H, AcOH, EtCO₂H, or PrCO₂H, the rate of solution of the magnesium in the acid is much greater at the 3-phase boundary magnesium-paraffin-acid than at other points on the magnesium piece. This "border effect" was not observed with hydrochloric acid or ammonium chloride solutions, or with the organic acids if the metal was covered with a film of <i>iso</i>-BuOH. The localized increase in rate of reaction depended directly on an increase in the rate of diffusion of the acid solution with respect to the metal surface. The active acid was adsorbed on the surface of the paraffin. The effect was intensified by the stirring action of the hydrogen evolved. When the whole body of aqueous acid was stirred mechanically the effect was obscured. The absence of the border effect with hydrochloric acid and ammonium chloride and in the presence of <i>iso</i>-BuOH is attributed to the absence of any differential local diffusion rate. The reservation is made that the observed phenomenon may not be due entirely to a difference in the diffusion rate.--S. G.</i></p>																			
ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION																			
SECTION 1: SYMBOL										SECTION 2: CHEMISTRY									
SUBGROUP										SUBGROUP									
SUBGROUP										SUBGROUP									

COMMON ELEMENTS																										PROCESSES AND PROPERTIES INDEX																										COMMON ELEMENTS																									
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<p><i>ca</i></p> <p>Rate of solution of magnesium in acids. Ya. V. Durdin and A. M. Markevich. <i>J. Gen. Chem. (U. S. S. R.)</i> 6, 230-40 (1934); cf. <i>C. A.</i> 30, 3302. Soln. of metals may be classed as either diffusion or as chem. processes depending on whether diffusion or one of the reactions on the surface of the metal is the slowest of several elementary acts. Exptl. data indicate that the soln. of Mg is essentially a diffusion process. The rate of soln. of Mg was measured in 0.1-0.25 N buffered AcOH solns. and in 0.1 and 0.15 N HCl with rate of stirring 0-700 r. p. m. and found to vary greatly with rate of stirring. In HCl the soln. rate</p>																										<p><i>γ</i></p> <p>is proportional to the acid concn. and consequently to the H-ion concn. In buffered solns. of AcOH the rate is proportional to the mol. acid concn. and practically independent of the H-ion concn. In both solvents the rate is independent of the concn. of the reaction products. The temp. coeff. for the soln. rate, measured at 0-15°, 15-30° and 30-45° and with stirring of 250 and 500 r. p. m., decreases with temp. rise and is independent of the rate of stirring. In HCl the rate of soln. of Mg with temp. is directly proportional to the fluidity of water $\mu = 1/\eta$; for AcOH solns. T/η gives a better agreement. A definite relation between the soln. rate of Mg and its potential could not be established. This does not necessarily prove the diffusion nature of the process. In the case of Cr, the rate of soln. is independent of the rate of stirring and the temp. coeff. is much higher than for Mg, indicating the chem. nature of the process.</p> <p style="text-align: right;">John Livak</p>																										<p>ASH-35A METALLURGICAL LITERATURE CLASSIFICATION</p>																									

The electrochemical theory of solution of metals in acids.
I. Ya. V. Iuridin. *Uchenye Zapiski Leningrad. Gosudarst. Univ., Ser. Khim. Nauk* 1959, No. 4 (40), 3-18.

(1) The local galvanic cell theory of soln. of metals in acids, according to which the rate of soln. is proportional to the no. of local cells, the elec. cond. and the difference of the potentials of the metal and of H^+ , is in conflict with exptl. facts, particularly with respect to the temp. coeff. of the reaction which is very different from the temp. coeff. of elec. cond., and with respect to the role of the nature of the acid and the effect of surface-active substances. A new point of view is developed, based on the assumption that the rate of the over-all soln. process is detd., independently, by the rate of cathodic evolution of H_2 and that of anodic emission of metal ions into the soln. The treatment further presupposes that diffusion, being practically instantaneous as compared with the rates of the electrochem. processes, plays no decisive role, an assumption known to apply to a sufficient degree to Fe, Sn, Cd, and Cr, if not to Mg and to alk. earth metals; it is also assumed that ions transfer through coad., in local microcells, if any, is practically instantaneous. The rate of evolution of H_2 is expressed according to Erdey-Gruz and Volmer (C.A. 25, 452), by the simplified formula $v_H = K_{1H}[H^+]e^{-E_0/RT}e^{-F\phi/RT}$, where ϕ = established potential metal/soln., E_0 = activation energy of the discharge of the H_2O^+ ion at $\phi = 0$. In formal analogy with the complete Volmer equation, $v_M = K_{1M}[M^+]e^{-F\phi_M/RT}e^{-F\phi/RT} - K_{-1M}e^{F\phi_M/RT}e^{F\phi/RT}$ (where $K_{1M} = K_{1M}e^{-E_0/RT}$) which takes into account both the direct and the reverse process, the rate of emission of metal ions is expressed by $v_M = K_{1M}e^{F\phi_M/RT}e^{-F\phi/RT} - K_{-1M}[M^+]e^{-F\phi_M/RT}e^{F\phi/RT}$; here, ϕ_M and ϕ , designate, resp., the equil. potential

at the given concn. of H_2O^+ or M^+ ions, ϕ_M and ϕ , the polarizations corresponding to the given rate of the process. Application of Volmer's formulas to the emission of metal ions involves the assumption that, in this process, too, Volmer's $\alpha = 0.5$, as in the discharge of H^+ ions. The same formalism can be derived also from the representations of Gurney (C.A. 26, 2122, 4260). If, now, one plots v_H and v_M as functions of ϕ_M and ϕ , the ab-

series of metals, the point dividing metals whose rate of dissoln. in acids will be detd. mainly by the rate of the electrode process, from metals for which diffusion can be expected to play a predominant role. By applying the "kinetic wt." method, and the expression of Levich and Frumkin (C.A. 36, 5411) for the ohmic potential drop in a microcell as a function of the radius of the microcathode, the coeffs. of parameter influence in the rate-of-electrode-process equation are estd. in terms of the values of the standard electrode potentials ϕ^0 and for 2 values of the diam. of the cathode, $d = 10^{-1}$ and 10^{-3} mm.; soln. in 1 N acid and absence of complex ions are assumed. The figures show that, for $d = 10^{-3}$ mm., the cathodic process will be rate-detg. for all metals for which $\phi^0 \leq 0.75$ v., that is up to Zn inclusive; from Mn on, the rate of soln. will be mainly detd. by diffusion. For $d = 10^{-1}$ mm., the dividing line lies at about 0.55 v.; hence, diffusion may become the rate-detg. process even in the case of Zn; the limit, at this d , lies at Cr. The effect of formation of complex ions is detd. by the shift of the potential, e.g., Cd dissolving in 3 N HCl has a potential of 0.62 v., in 10 N HCl, 0.72 v. Considerations of the variation of the overpotential with the concn. of the acid (HCl or H_2SO_4) lead to the conclusion that, between 0.1 and 1 N, the rate of soln. v of the metal is related to the concn. c of the acid by $v = kc^a$ where $1/2 \leq a \leq 1$; the value $a = 1/2$ is linked with a variation of the Tafel const. $\Delta s = 0$, the case $a = 1$ with $\Delta s = 0.058$. N. Thon

1ST AND 2ND ORDER										3RD AND 4TH ORDER									
PROCESSES AND PROPERTIES INDEX																			
<p><i>Lab. Inorg. Chem. 2</i></p> <p>Kinetic weight of a process which forms a link in a complex process system. I. Ya. V. Dardin (Leningrad State Univ.). <i>J. Gen. Chem.</i> (U.S.S.R.) 16, 1153-70 (1946).—Math. theoretical discussion of the effect of a specific single process upon the general course of a complex reaction process sequence. The coeff. of effect of the process parameters is detd. by: $\eta = \Delta V / \Delta v$, where ΔV is the actual increment of the velocity of the entire system of consecutive processes caused by the change of the parameter x, and Δv is the increment of velocity calcd. from the individual equation of the rate of the given process and corresponding to the given change of one individual parameter x in this equation. The coeff. can be considered as a measure of inertness of a process. G. M. Kosolapoff</p>																			
ASB-354 METALLURGICAL LITERATURE CLASSIFICATION																			
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PROCESSES AND PROPERTIES INDEX																			
<p>*148. Contribution to the Electrochemical Theory of the Solution of Metals by Acids. II—III. (in Russian.) Ia. V. Durdin. <i>Journal of General Chemistry</i> (U.S.S.R.), v. 17(79), May 1947, p. 844-872.</p> <p>In Part II, the use of the "theory of local elements" to express the rate of solution of metals by acids is evaluated. Use of equations for the rates of electrode processes rather than the above theory is indicated to be preferable. In Part III, an attempt is made to divide the electrochemical series of metals into 3 groups: those in which the kinetics of solution by acids are determined by electrode processes; those determined by diffusion processes; and those of a mixed type. Influence of conditions of solution are briefly considered. 26 ref.</p>																			
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CA

Rate of solution and potential of dissolving chromium.
 V. A. Durdin and A. M. Markevich (Leningrad State
 Univ.). *Zhur. Obshch. Khim.* 19, 2131-47 (1940); *J. Gen.
 Chem. U.S.S.R.* 19, No. 12, 2605-20 (Engl. translation).
 Samples of Cr, 1.5×3 cm., 0.5-0.7 mm. thick, produced
 by electrodeposition at 60 amps./sq. dm. at 25° on
 typographic metal and soln. of the base in dil. HNO_3 ,
 even if activated by 1-min. immersion in 10 N HCl, dis-
 solve in HCl at first slowly, but soon reach a const. rate.
 of soln., v , the higher the greater the concn. of the acid.
 In 9-10 N HCl, at 40°, the induction period is less than 1
 min. In HCl up to 7.75 N, v is independent of the rate of
 stirring w ; at higher HCl concns., v increases with w , but
 from a certain crit. w up, it again becomes const. In
 9 and in 10 N HCl, that crit. w = 100 and 300-400 r.p.m.,
 resp. Paralleling the independence of v of w , the po-
 tential E of dissolving Cr also does not vary with w in HCl
 up to about 10 N; in 10 N HCl, E increases by about 20
 mv. with w varying from 0 to 450 r.p.m. In terms of the
 temp., between 20 and 60°, v obeys the Arrhenius equation,
 with a ten-degree temp. coeff. greater than 8; conse-
 quently, diffusion is not rate-dtg. In terms of the
 concn. c of HCl, v increases with c as long as w remains
 below the crit. value, and points obtained at different w

lie on a single curve. At $c > 8$ N, v passes through a max.,
 which moves to higher c and w with increasing w ; however,
 at $w > 300$, the dependence of v on c is again represented
 by one single curve without max. The potential E re-
 mains practically const. = 0.59 ± 0.01 v. (on the
 1 N-10 N HCl H scale). Addn. of Cr^{+++} ions, up
 to 1 N, has no significant effect on either v or E . In
 H_2SO_4 , the induction period is of the order of 10-30 min.,
 and v is independent of w in the c range 1-10 N H_2SO_4 . A
 distinct increase of v with w was observed in 15 N H_2SO_4 .
 The conclusion that the rate of soln. of Cr in H_2SO_4 is not
 detd. by diffusion, is borne out by the 10-degree temp.
 coeff., 2.1 between 30 and 50°. With increasing c , the
 rate v increases, but more slowly than in HCl; in the ab-
 sence of stirring ($w = 0$), v passes through a max. at c
 between 10 and 15 N. In the c range 1-10 N H_2SO_4 , E
 is practically const. = 0.54 ± 0.01 v.; it is lowered by
 about 30 mv. at $c = 15$ N. In HCl and in not too
 concd. H_2SO_4 , addn. of KCl, 0.5 N, has hardly any ef-
 fect on v and on E ; however, in more concd. H_2SO_4 , addn.
 of KCl increases both v and E , thus, at $c = 15$ N, v is
 doubled, and E increases by 40 mv. The difference be-
 tween the equil. potential of Cr and its E in the process
 of soln. in acids indicates that the latter is accompanied by
 a substantial anodic polarization, of the order of 0.25-
 0.30 v.

N. Thon

DURDIN, Ya. V.

USSR/Chemistry - Corrosion

Apr 51

"Rate of Solution and Potential of Dissolving Iron,"
Ya. V. Durdin, M. A. Oranskaya, Lab of Inorg Chem,
Moscow State U

"Zhur Obshch Khim" Vol, XXI, No 4, pp 604-614

Tabulates and analyzes data on dissolving of Armco
and tech roofing iron by HCl and H₂SO₄, comparing
rate of soln and potential of both grades.

182T12

CA

2

Laws determining the rate of solution of metals in concentrated acids. I. Ya. V. Dardin (Leningrad State Univ.). *Zhur. Obshch. Khim.* (J. Gen. Chem.) 21, 801-8 (1951).—Palmer's attribution of the max. of the rate of soln. of metals at a certain concn. of the acid to max. elec. resist. is refuted by numerous observations to the effect that the 2 maxima do not coincide. In the case of soln. of Cr in HCl, the max. could be made to disappear through vigorous agitation of the soln., at 370 r.p.m. Hence the conclusion is that curves without and with a max. are not fundamentally different, but that the max., and the fall of the rate with further increasing concn. of the acid, are due to passivation of the metal. If, before the max., the rate of soln. v , of the metal (per unit surface area) as a function of the concn. c of the acid is given by $v = kc^2$, and the rate of removal of the dissolved metal from the surface is $v_d = k(\omega^2 + s)c_s$ (where c_s = concn. of the metal salt at the surface, ω = rate of stirring, and ω lies between 0.5 and 1) one has, in the stationary state, $k(\omega^2 + s)c_s = kc^2$. If c_s is the satn. concn., the rate v_d can increase only up to a limit $v_d^* = k(\omega^2 + s)c_s^*$, and this must decrease with increasing concn. of the acid. A further increase of the rate of diffusion becomes impossible when $\omega = \omega^*$ and $c_s = c_s^*$. With further increasing concn. of the acid v_d^* decreases, and v must also decrease on account of the condition of stationarity $v = v_d$. Along the descending branch beyond the max., v decreases owing to pptn. of salt at the surface of the metal and a corresponding decrease of its active surface area.

N. Thon

USSR/Chemistry - Corrosion

Jan 52

"Problem of Relationships Which Determine the Rate of Solution of Metals in Concentrated Acids. II. Rates of Solution and Potentials of Dissolved Chromium and Iron," Ya. V. Durdin, Lab of Inorg Chem, Leningrad State Order of Lenin University, A. A. Zhdanov

"Zhur Oshch Khim" Vol XXII, No 1, pp 3-17

Discusses relationships detg rate of soln of Cr and Fe in concd (1N to 10N) H_2SO_4 and HCl solns from standpoint of generalized electrochem theory. Curves expressing rate of soln as function of acid concn are qualitatively identical to curves expressing dependence of rate of cathodic evolution

20779

USSR/Chemistry - Corrosion (Contd)

Jan 52

of H_2 on concn of same acids. From this and other findings, detd that relationships examd are in good agreement with Z. Iofa's and A. Frumkin's theory of H overvoltage in concd acids.

20779

DURDIN, Ya. V.

LORDIN, Y. A.

Simultaneous determination of rates of solution and no.

of solution of polymers in organic solvents

by the method of the rate of solution

of polymers in organic solvents

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USSR/Chemistry

Card 1/1 Pub. 127 - 12/12

Authors : Durdin, Ya. V.; and Nikolaeva, S. A.

Title : ~~Research Paper~~
Study of the dissolving speed of cadmium and its stationary potential in hydrochloric acid

Periodical : Vest. Len un. ser. mat. fiz. khim. 5, 165-185, May 1955

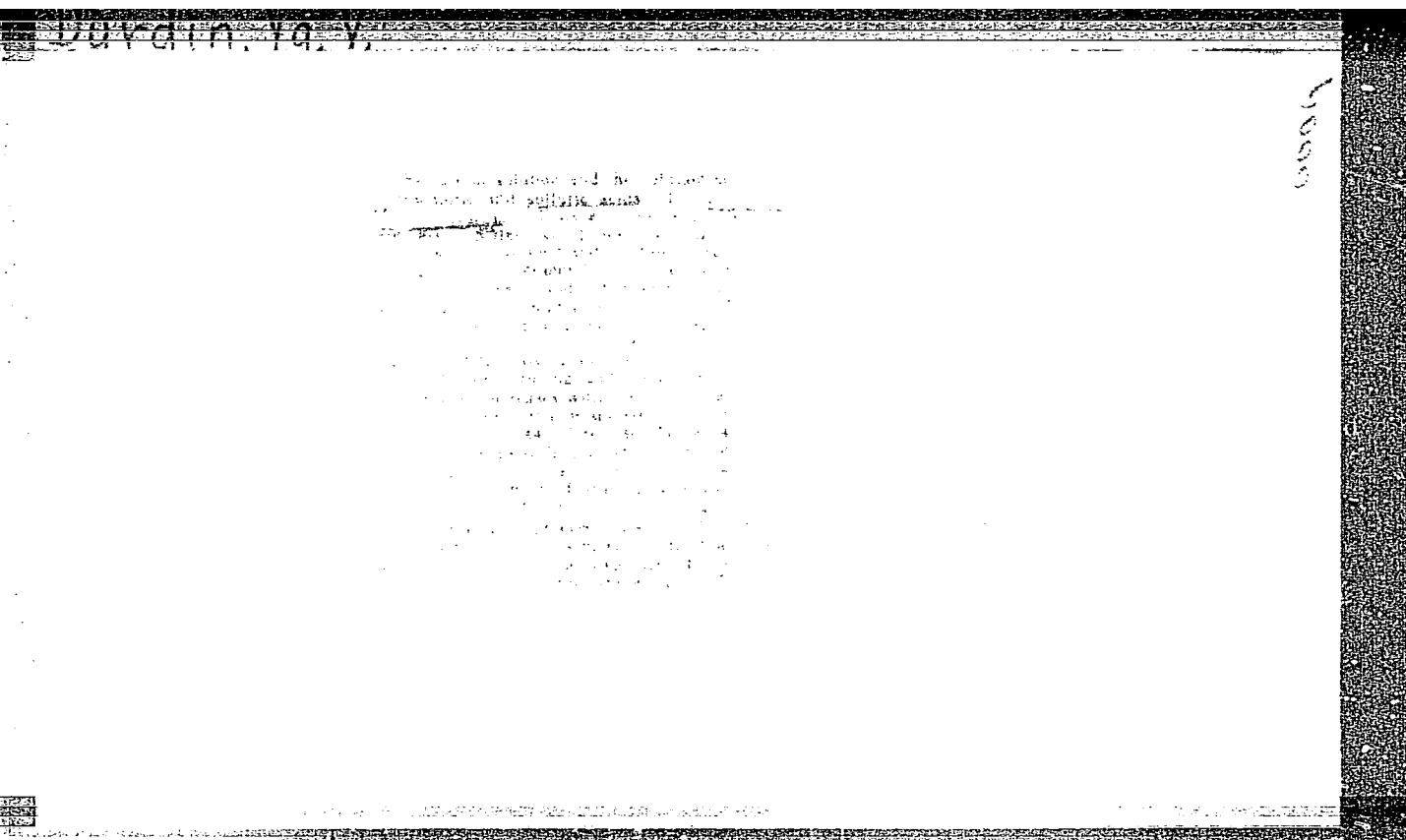
Abstract : The speed with which cadmium dissolves in hydrochloric acid and the potential of the dissolved cadmium was studied at the laboratory of the Scientific Research Chemical Institute named after A. M. Lomonosov in Leningrad. The experiments that were conducted are described and their results are presented in the forms of tables, diagrams and photographs. Seventeen USSR references (1928-1954). Tables, figures, illustrations.

Institution :

Submitted : December 15, 1955

DURDIN, YA.V.

The Problem on the Effect of Admixtures on the Dissolving Speed of Cadmium in
Hydrochloric Acid
Vest. Leningrad U., Ser. Fiz. i Khim., no. 1, 1956, p. 83



DURDIN, YA.V.

Application of the Oscillograph Method for Researching the Kinetics of Dissolving Iron
in Sodium Acid

Vest. Leningrad U., Ser. Fiz. i Khim., no. 1, 1956, p. 127

DURDIN, Ya.V.; NIKOLAYEVA, S.A.

Effect of admixtures on the rate of solution of cadmium in hydrochloric acid, Vest. Len. un. 11 no.4:83-97 P '56. (MIRA 9:7)
(Cadmium) (Solution (Chemistry))

DVORKIN, K.A.; DURDIN, Ya.V.

Studies on the rate of solution and on the potential of zinc dissolved
in hydrochloric and sulfuric acid solutions. Part 1. Vest.Len.un.11
no.4:99-110 F '56. (MLBA 9:7)
(Zinc) (Solution (Chemistry))

DURDIN, Ya.V.; KRAVTSOV, V.I.

Oscillographic method for studying the kinetics of solution of iron in
sulfuric acid. Vest.Len.un.11 no.4:127-131 F '56. (MLBA 9:7)
(Solution (Chemistry)) (Oscillograph)

DURDIN, YA. V.

AUTHORS: Durdin, Ya. V., and Kravtsov, V. I. 54-4-16/20

TITLE: The Investigation of the Kinetics of Electrode-Processes Taking Place on the Surface of Metals Soluble in Acids. I. Iron (Issledovaniye kinetiki elektrodnykh protsessov, protekayushchikh na metallakh, rastvoryayushchikhsya v kislotakh. I. Zhelezo).

PERIODICAL: Vestnik Leningradskogo Universiteta Seriya Fiziki i Khimii, 1957, Vol. 22, Nr 4, pp. 131-147 (USSR).

ABSTRACT: The experiments were carried out with an Armco iron (0.017 % C, 0.02 % Si and 0.006 % Mn) in a glass apparatus, in hydrogen atmospheric pressure, at $25^{\circ} \pm 0.1^{\circ}\text{C}$. By cutting in and out a directly polarized current the curves of the cathode-polarization and the oscillograms of the Armco iron contained in $2\text{NH}_2\text{SO}_4$ have been obtained and studied. The tabulated results show, that the solution-velocities of iron calculated on 1 cm^2 of visible surface rise after some time, whereas the solution velocities calculated on the real surface go down. Latter, apparently, can be attributed to the increase of the lecessive voltage of the hydrogen on the iron, depending on the accumulation of the free carbon on the surface of the iron. From the oscillograms the quantities of the double-layer-capacity were obtained

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The Investigation of the Kinetics of Electrode-Processes Taking 54-4-16/20
Place on the Surface of Metals Soluble in Acids.

and thus the changes of the real surface were determined. The deviations of the cut-out-oscillogram at small polarization from the theoretical quantities can also be explained by the fact, that on the iron surface there is a hydrogen excessive voltage which is influenced by the slow discharge and the slow disappearance of the hydrogen from the iron surface. For the strong cathode-polarization a value $b = 100$ mV was obtained, for computations, however, the value $b = 60$ mV has to be used. This deviation can be explained by the influence of the diffusion of the atomic hydrogen into the solution upon the velocity of the total process of the hydrogen separation. There are 8 figures, 3 tables, and 35 references, 22 of which are Slavic.

SUBMITTED: January 7, 1957.

AVAILABLE: Library of Congress.

Card 2/2

DURDIN, Ya. V.

AUTHORS: Dvorkin, K. A. , Durdin, Ya. V.

54-1-8/17

TITLE: The Study of the Rate of Solution and of the Solubility Potential of Zinc in Hydrochloric and Sulphuric Acid (Issledovaniye skorosti rastvoreniya i potentsiala rastvoryayushchegosya tsinka v solyanoy i sernoy kislotakh). II. The Rate of Solution of Monocrystalline Zinc (II. Skorost' rastvoreniya monokristallicheskogo tsinka)

PERIODICAL: Vestnik Leningradskogo Universiteta Seriya Fiziki i Khimii (Nr 1), 1958, Nr 4

ABSTRACT: Previous works (Ref.1) made it appear possible that, in the case of a high purity of zinc, small modifications in the crystal structure of the samples investigated exercised considerable influence upon their dissolving velocity. At the same time it is presumed that the influence exercised by the physical structure of the zinc can be eliminated by investigating the dissolving velocities of the individual faces of the monocrystals of zinc. In the present paper the authors tell of results which they obtained when investigating

Card 1/4

The Study of the Rate of Solution and of the Solubility Potential of Zinc/
in Hydrochloric and Sulphuric Acid. 54-1-8/17

II. The Rate of Solution of Monocrystalline Zinc

the dissolving velocity of the basic face 0001 of monocrystals of very pure zinc in the acids (HCl and H_2SO_4).

The method was in principle identical with that described by ref. 1 (both works were completed in 1949). Results:

1.) Monocrystals were obtained from very pure zinc (99,9999 atomic zinc %) and the possibilities for applying the methods developed by Paliban and Froyman were described.

2.) The velocity of the self-dissolution of the basic face 0001 of the monocrystals of zinc in hydrochloric- and sulphuric acid and their steady potentials were investigated. It was shown that the dependence of the velocity of self-dissolution on the concentration of the acid is of exponential character in the case of hydrochloric acid.

In the case of sulphuric acid it is nearly linear. The steady potential of the self-dissolving monocrystals of zinc shifts in a negative direction in hydrochloric acid, and in sulphuric acid it varies only within the error limits.

3.) For the temperature coefficient of the velocity of

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The Study of the Rate of Solution and of the Solubility Potential of Zinc in Hydrochloric and Sulphuric Acid. 54-1-8/17
 II. The Rate of Solution of Monocrystalline Zinc

self-dissolution of zinc monocrystals the value $\frac{vt}{v} + 10 = 1,9 - 2,0$ was obtained. 4.) It was shown that mixing the solution exercises a considerable influence upon the velocity of self-dissolution of the zinc, which is, however, considerably lower than in the case of a diffuse dissolution of magnesium in acids. 5.) A comparison was drawn between the relative velocities W_{Zn} ; W_{Cr} ; W_{Kd} Hg ; W_{Kd} Pb ; W computed. It was shown that the interrelations between these amounts, as also the dependence of the steady potential of zinc and cadmium on the concentration of the hydrochloric acid can be explained on the basis of the kinetics of electrode processes in concentrated acid solutions. The influence exercised by the specific anion adsorption and the formation of complexes between the anions of the acid and the ions of the metal upon these processes in the solution is taken into account. There are 4 figures, 5 tables, and 20 references, 16 of which are Slavic.

Card 3/4

The Study of the Rate of Solution and of the Solubility Potential of Zinc in Hydrochloric and Sulphuric Acid. 54-1-8/17
II, The Rate of Solution of Monocrystalline Zinc

SUBMITTED: July 10, 1957

AVAILABLE: Library of Congress

1. Zinc-Solubility-Analysis

Card 4/4

DURDIN YA. V.
ANOSHIENKO, I. P.

PHASE I BOOK EXPLOITATION SOV/2216

5(4)

Soveshchaniye po elektrokhemii. 4th, Moscow, 1956.

Trudy... [Izbornik] (Transactions of the Fourth Conference on Electrochemistry; Collection of Articles) Moscow, Izd-vo AN SSSR, 1959. 868 p. Errata slip inserted. 2,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Otdeleniye khimicheskikh nauk.

Editorial Board: A.M. Pruskin (Resp. Ed.), Academician, O.A. Yasin, Professor, S.I. Zhdanov (Resp. Secretary), B.M. Kabanov, Professor, S.I. Zhdanov (Resp. Secretary), B.M. Kabanov, Professor, Ya. M. Kolotyrkin, Doctor of Chemical Sciences, V.V. Losev, P.D. Lukovtsev, Professor, Z.A. Solov'yeva, V.V. Stender, Professor, and G.M. Floriansovich; Ed. of Publishing House: N.G. Yegorov; Tech. Ed.: T.A. Prusakova.

PURPOSE: This book is intended for chemical and electrical engineers, physicists, metallurgists and researchers interested in various aspects of electrochemistry.

COVERAGE: The book contains 127 of the 138 reports presented at the Fourth Conference on Electrochemistry sponsored by the Department of Chemical Sciences and the Institute of Physical Chemistry, Academy of Sciences, USSR. The collection pertains to different branches of electrochemical kinetics, double layer theories and galvanic processes in metal electrodeposition and industrial electrolysis. Authenticated discussions are given at the end of each division. The annotated bibliography includes references to articles published in periodical literature. No personalities are mentioned. References are given at the end of most of the articles.

Pakotakaya, I.A., and A.I. Oshe (Institute of Electrochemistry, Academy of Sciences, USSR). Effect of Atomic Hydrogen Diffusion on the Potential of Polarized Iron Electrodeposits on It 82

Vishnirakis, R.M., and Yu. Yu. Matulis (Institut khimii i khimicheskoy tekhnologii AN Lit. SSR-Institute of Chemistry and Chemical Technology, Academy of Sciences, Lithuanian SSR). Role of Inorganic Ions in the Process of Electrolytically Parating Hydrogen From Acid Solutions at a Rotating Cathode 86

Jofa, Z.A., and E.A. Maznichenko (Moskovskiy gosudarstvennyy universitet-Moscow State University). Influence of the Nature of Cations on Overvoltage During the Evolution of Hydrogen From Alkaline Solutions at a Mercury Cathode 91

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Durdin, Ya. V., L. Kish, and V.I. Kravtsov, (Leningradskiy gosudarstvennyy universitet-Leningrad State University - Leningrad State University imeni A.A. Zhdanov). Use of the Cathodic Deposition Method in Investigating the Kinetics of Electrodeposition of Metals Which Take Place at the Surface of Dissolving Metals 102

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5(4)

AUTHORS:

Durdin, Ya. V., Tsvetarnyy, Ye. G.

SOV/54-59-2-18/24

TITLE:

Hydrogen Separation Overvoltage on an Amalgamated Zinc Electrode in Concentrated Hydrochloric-acid- and Hydrogen-bromide Solutions (Perenapryazheniye vydeleniya vodoroda na amal'gamirovannom tsinkovom elektrode v kontsentrirrovannykh rastvorakh solyanoy i bromistovodorodnoy kislot)

PERIODICAL:

Vestnik Leningradskogo universiteta. Seriya fiziki i khimii, 1959, Nr 2, pp 119-128 (USSR)

ABSTRACT:

The investigation of the hydrogen overvoltage can give information on the rules and the mechanism of the influence of specific adsorptions of inorganic anions on the kinetics of electrode processes. There is, however, the difficulty of separating this influence from other influences such as change of concentration and effect of hydrogen ions on their discharge rates. Iofa and Frumkin (Refs 1-4) set up an equation for the rate of the cathodic H-separation process, in which they considered the above-mentioned influences. The equation corresponded qualitatively quite well to experimental observations. The degree of its quantitative accuracy is not yet sufficient,

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Hydrogen Separation Overvoltage on an Amalgamated Zinc Electrode in Concentrated Hydrochloric-acid- and Hydrogen-bromide Solutions SOV/54-59-2-18/24

it was checked once more in the present paper. Amalgamated electrodes were used because of their relatively high freedom of other secondary influences (change of the active electrode surface, and change of the physical state). Besides, the polarization curves were plotted oscillographically in contrast to the usual method (Fig 6). The usually applied investigation method does not principally differ from the one described in the papers by Durdin and Kravtsov (Ref 6). The electric scheme consisted of the ordinary compensation scheme for the measurement of the electrode potential, a millivoltmeter, and an eight-loop oscillograph of the MPO-2 type. In order to eliminate the disturbing influences mentioned in the introduction, the polarization curves $\eta - \lg i$ were plotted by three different methods: 1) By a slow transition of these curves from high to low polarization, and vice versa, with 2-3 hours' staying on each current density until the constancy of the potential was attained. 2) The same in a time of 3-4 minutes by use of the cathode millivoltmeter. 3) By plotting the polarization curves from one point, i.e. waiting - at a given current density - for the potential constancy of the electrode, and then

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Hydrogen Separation Overvoltage on an Amalgamated Zinc Electrode in Concentrated Hydrochloric-acid- and Hydrogen-bromide Solutions SOV/54-59-2-18/24

switching to lower current densities in a series of measurements. The potential jumps of the electrode are measured by an oscillograph. The results of measurement for hydrochloric-acid solutions in the concentration interval of 0.1 - 8 N are compiled in table 1 and in figures 1 and 2, for HBr-solutions in the interval of 0.1 - 5 N also in table 1 and in figure 3. The curves of HCl and HClO_4 on mercury electrodes are shown in figures 4 and 5 for comparison. The curves obtained consist of 2 parts; a linear one which only corresponds to the discharge of hydrogen ions, and one which corresponds to the simultaneous measurement of the hydrogen separation at the cathode and the discharge of zinc ions into the solution at the anode. The first part of the curve mentioned corresponds well to the equation by Tafel. At low concentrations, this value nearly corresponds to the theoretical one, it increases monotonously with an increase in concentration (in the HCl-solutions of the mentioned interval from 110 to 149, and in the HBr-solutions from 112 to 275 mv).

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Hydrogen Separation Overvoltage on an Amalgamated Zinc Electrode in Concentrated Hydrochloric-acid and Hydrogen-bromide Solutions SOV/54-59-2-18/24

The law observed can be explained by the specific adsorption of the anions (the adsorption of the anions specifically lowers the overvoltage of the hydrogen separation). There are 6 figures, 2 tables, and 11 references, 10 of which are Soviet.

SUBMITTED: October 15, 1958

Card 4/4

S/054/60/000/02/10/021
B022/B007

AUTHORS: Durdin, Ya. V., Tsventarnyy, Ye. G.

TITLE: The Overvoltage¹ of Hydrogen Evolution in Concentrated
Sulfuric Acid Solutions on an Amalgamated Zinc Electrode

PERIODICAL: Vestnik Leningradskogo universiteta. Seriya fiziki i khimii,
1960, No. 2, pp. 80-92

TEXT: In previous papers (Ref. 1), the results obtained by investigating the overvoltage in the hydrogen evolution in concentrated hydrochloric acid- and hydrobromic acid solutions on an amalgamated zinc electrode are shown. In the present paper the overvoltage of hydrogen on an amalgamated zinc electrode in sulfuric acid of the concentrations 0.1 N, 1 N, 3 N, 5 N, 7 N and 10 N is measured by means of the usual- and the oscillographic method. The devices used and the methods employed were the same as in Ref. 1. Fresh sulfuric acid, which had been distilled twice or three times, was used. The polarization curves were recorded as in Ref. 1 by means of three different methods. The polarization curves of the dependence ϕ on $\log i$ recorded in 3 N sulfuric acid by means of a cathode millivolt-

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meter in the direction from greater polarizations to smaller ones, is given (Fig. 1). The curves $\varphi - \log i$ in H_2SO_4 given in Fig. 2, which were recorded by means of a cathode millivoltmeter, were plotted on the basis of the overvoltage determined on an amalgamated zinc electrode in 0.1 - 10 N sulfuric acid (Table 1) and on the basis of the data given in Table 2. Table 2 further gives the values of the potential of the equilibrium-hydrogen-electrode in corresponding H_2SO_4 solutions with respect to a normal hydrogen electrode. Table 3 gives the angular coefficients of the sections ab and bc. Table 4 gives the overvoltages in an 1 N H_2SO_4 solution and the current density of 0.1 a/cm² on an electrode made from mercury, amalgamated zinc and hard zinc. The change in the angular coefficient $\delta\varphi/\delta\log i$ with a polarization increase of the electrode and a variation in acid concentration is investigated. As shown by Fig. 3, the break of the curve $\varphi - \log i$ increases considerably after the addition of zinc ions. The influence exerted by the specific anion adsorption and the change in the Ψ_1 -potential upon the discharge rate of hydrogen ions in sulfuric-, hydrochloric-, and hydrobromic acid is investigated. The data obtained for the quantities W, W', and $\Delta\Psi_1$, which were determined on Card 2/3

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the basis of the data for the amalgamated zinc electrode, are given in Table 5. The values W calculated from equation (8) are compared with the values W_{exp} determined experimentally in sulfuric acid with variable concentration (Table 6), where also the values obtained for W' calculated according to equation (9), are given. Satisfactory agreement between the values W calculated on the basis of equation (8) and the experimentally determined values W_{exp} follows also from the curves in Fig. 4. It is of interest to compare the data given by Table 6 with those in Table 7. In the latter, the values of W_{exp} , W^0 , and W' are given, which correspond to the cathodic hydrogen evolution on the amalgamated zinc electrode in HCl and HBr. The values given in Table 7 were calculated on the basis of the results given in an earlier paper (Ref. 1). In Table 8 the values ϕ for a certain concentration interval of HCl and HBr are given. The following persons are mentioned: Z. A. Iofa and A. N. Frumkin (Ref. 3), Diploma Candidate of the kafedra elektrokhimii (Chair of Electrochemistry) V. Mal'tsev, A. N. Frumkin and collaborators (Ref. 9) and Bokris (Ref. 10). There are 4 figures, 8 tables, and 15 Soviet references.

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Card 3/3

S/076/60/034/009/031/041XX
B020/B056

AUTHORS: Chzhan Chzhi-bin, Kravtsov, V. I., and Durdin, Ya. V.

TITLE: Kinetics of Electrode Processes on Solid Electrodes.
I. Anodic Polarization Curves for Nickel in Sulfuric Acid

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 9,
pp. 2041 - 2054

TEXT: It was the purpose of the present work to determine the true function $i(\varphi)$ without disturbing moments for the anodic dissolution of a metal as well as the investigation of the activation of a metallic electrode under the effect of anodic polarization. A nickel electrode in H_2SO_4 was investigated, where it is known that in the anodic polarization of Ni in H_2SO_4 no noticeable concentration polarization or passivation is observed within a rather wide range of current density. The activation of Ni-electrodes by an anode current, on the other hand, is known. The $i(\varphi)$ and $\varphi(t)$ curves were recorded by means of an electric measuring device with the help of a cathode voltmeter and a figure-eight loop oscilloscope with two-

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Card 1/4

Kinetics of Electrode Processes on Solid
Electrodes. I. Anodic Polarization Curves
for Nickel in Sulfuric Acid

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cascade-d.c.-amplifier. The electrodes were provided by a rolled foil of pure Ni of "Hilger" trade-mark, which had been made available by Professor Ya. M. Kolotyarkin. In the present paper, the results obtained in 1 N and 10 N H_2SO_4 at $25 \pm 0.1^\circ$ are given. The potential of the nickel anode changed very considerably in time after a current of constant density was switched on. The curve in Fig. 1 describes the change in the potential of the previously automatically dissolved nickel electrode in 1 N H_2SO_4 immediately after the anodic polarization current with a density of 0.04 ma/cm^2 had been switched on. Curve 1 in Fig. 2 is the "steady" anodic polarization curve $\varphi = f(\log I)$, which had been drawn on the basis of the potential on an Ni-anode in 1 N H_2SO_4 after having been held for a long time under steady conditions and various densities of the current I. From Fig. 2 it follows that in curve I there is no linear section; however, on the curves $\varphi = f(\log I)$ linear sections were experimentally found, to which coefficients b_{av} of 10 to 30 mv corresponded. The anodic polarization curve II in Fig. 2 was drawn on the basis of the results obtained by the "change-Card 2/4

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over" method on an electrode held at $i = 2 \text{ ma/cm}^2$. Curve II, in contrast to curve I, has a large linear section, to which there corresponds an angular coefficient of $b_1 = 92 \text{ mv}$. The results obtained by oscillographic measurements on automatically dissolving electrodes are given in a table, from which it follows that the difference between the $\psi = f(\log i)$ -curves, recorded in the same $10 \text{ N H}_2\text{SO}_4$ -solution, is 56 mv . Irrespective of the considerable spread of the individual points, Fig. 3 shows that the volume of the double layer on the Ni-electrode is only little dependent on the potential in a large potential range. Fig. 4 shows the characteristic $\psi = f(\log i)$ curves, recorded on one and the same electrode after a long-time holding at three different current densities. Table 2 shows the mean values of the coefficients b_1 , which correspond to the $\psi = f(\log i)$ curves, recorded on an Ni-electrode previously held at various densities of the activating current. The curves C - ψ in Fig. 5 correspond to the same surface states of the nickel electrode as the anodic curves in Fig. 4. Fig. 6 shows the steady $\psi = f(\log I)$ -anode curves, recorded on nickel in 1 N and $10 \text{ N H}_2\text{SO}_4$. The data of the anodic change-over oscillograms in 1 N and $10 \text{ N H}_2\text{SO}_4$ are given in Tables 3 and 4. The dependence of the potential of the nickel

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anode on the logarithm of the true current density of the preceding
anodic polarization is given in Fig. 7. Mention is made of V. A. Yuza,
L. D. Kopyl, V. A. Royter, Ye. S. Poluyan, A. T. Vagramyan, and
A. N. Frumkin. There are 7 figures, 4 tables, and 31 references: 16 Soviet,
1 US., 6 British, and 8 German.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova
(Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: December 26, 1958

Card 4/4

DURDIN, Ya.V.; TSVENTARNYY, Ye.G.

Overvoltage of the electrodeposition of hydrogen from concentrated solutions of hydrochloric and perchloric acids on an amalgam copper electrode. Vest LGU 16 no.16:85-96 '61.
(MIRA 14:8)

(Hydrogen)
(Overvoltage)

DURDIN, Ya.Y.; TSVENTARNYY, Ye.G.

Oscillographic investigation of the kinetics of cathodic
hydrogen evolution in concentrated solution of hydrochloric
and perchloric acids at the amalgamated copper electrode. Vest.
IGU 17 no.10:117-128 '62. (MIRA 15:5)
(Electrolyte solutions)

AVDEYEV, D.K.; JURDIN, Ya.V.

Dissolution rate of zinc amalgam in diluted solutions of acids studied by the radioactive-tracer technique. Part 1. Vest. LCU 19 no.16:110-117 '64.

Dissolution rate of zinc amalgams in diluted solutions of acids studied by the radioactive-tracer technique. Part 2. Ibid.:118-123 (MIRA 17:11)

PTITSYNA, N.V., kand.khim.nauk; DURDINA, O.A.

Copper naphthenate paste is a substitute for Bordeaux mixture.
Zashch. rast. ot vred. i bol. 6 no.3:36-38 Mr '61. (MIRA 15:6)

1. Glavnyy agronom-entomolog Krymskogo oblastnogo upravleniya
sel'skogo khozyaystva (for Durdina).

(Fungicides)
(Naphthenic acids)

DURDINA, O.D.

Improve the labeling and packing of poisonous chemicals.
Zashch. rast. ot vred. i bol. 7 no.12:15-16 D '62.

(MIRA 16:7)

1. Nachal'nik Krymskoy oblasti stantsii zashchity rasteniy,
Simferopol'.

(Agricultural chemicals--Packing)

DURDINETS, P.P.

Development and mechanization of the lumbering, paper, and woodworking industry in the Ukraine in 1964. Bum. i der. prom. no.1:3-5 Ja-Mr '64. (MIRA 17:6)

DURDINETS, P.P.

lumbering, paper, and woodworking industry in the Ukrainian
S.S.R. Bum. i der. prom. no.4:3-6 O-D '64 (MIRA 18:2)

19

5

Grain-Size in Chromium-Bearing Structural Steel. M. Braun, M. Durdo and N. Ivanov. (Kachestvennaya Stal, 1937, No. 4, pp. 39-43). (In Russian). A chromium steel with 0.8-1.1% of chromium and 0.35-0.45% of carbon was used for the investigation. The laboratory tests which were carried out showed that in tensile tests the grain size had practically no effect on the mechanical properties. In the impact tests the fine-grained steel gave slightly better values than the coarse-grained steel. After normalizing and after quenching, fine-grained steel had a hardness about 25% below that of the coarse-grained material. On tempering, the hardness of the coarse- and fine-grained steel was the same. Some experiments were carried out with disc-shaped specimens, which showed that fine-grained steel quenched under the laboratory conditions had a much smaller tendency to buckle. In cylindrical specimens the decrease in hardness from the surface to the centre amounted to 24.5% in coarse-grained and to 50.5% in fine-grained steel. Shafts made from the coarse-grained steel were much more readily machined and caused much less tool wear as compared with the fine-grained steel.

DURDO Mariya T

BRAUN, Mikhail Petrovich; KURUKLIS, Georgiy Leonidovich; DURDO, Mariya Timofeyevna; BABUSHKINA, G.I., retsenzent; KOSTETSKIY, B.I., doktor tekhnicheskikh nauk, professor, redaktor; LEUTA, V.I., inzhener, redaktor izdatel'stva; HUDENSKIY, Ya.V., tekhnicheskii redaktor

[Inoculated high-speed steel] Modifitsirovannaya bystroreshushchaya stal'. Kiev, Gos. nauchno-tekhn. izd-vo mashinostoit. lit-ry, 1956.
130 p. (MLRA 9:11)

(Tool steel)

DURDOVIC, Anton

Death caused by electricity. Elektrotechnik 18 no.11:
330-332 N°63.

L 9932-66 EWP(j) WW/RM
 ACC NR: AP6003386 44, SS SOURCE CODE: CZ/0043/65/020/007/0570/0576
 AUTHOR: Kysel, Ondrej--Kisel, O. (Engineer); Durdovic, Vladimir--Durdovich, V. 38
 (Engineer) B
 ORG: Laboratory of Polymers, Slovak Academy of Sciences, Bratislava (Laboratorium
 polymerov Slovenskej akademie vied)
 TITLE: Determination of inoculated polypropylene and of a mixture of polypropylene-
 polystyrene by the method of gas chromatography
 SOURCE: Chemicke Zvesti, no. 7, 1965, 570-576
 TOPIC TAGS: gas chromatography, polystyrene, polypropylene plastic, polymer physical
 chemistry, thermochemistry
 ABSTRACT: 1 The products investigated
 resulted from thermal decomposition of polypropylene. The meth-
 od that was investigated by the authors allows an accuracy better
 than + 5%. It was found that the amount of the inoculating
 substance did not have any influence upon the decomposition
 process. It was also found that the amounts of styrene and propyl-
 ene obtained from mixtures of atactic polypropylene and polysty-
 rene were equal. Orig. art. has: 8 figures. [JPRS]
 SUB CODE: 07, 11 / SUBM DATE: 11Feb65 / ORIG REF: 002 / OTH REF: 011

Card 101

DURDYEV, B.

DURDYEV, B.

"Dynamics of Agglutinins in the Blood With an Account of the Clinical Picture of Tripanosomiasis (Suauru) in Camels." Cand Vet Sci, Uzbek Agricultural Inst, Tashkent Agricultural Inst, Ashkhabad, 1954. (RZh Biol, No 7, Apr 55)

SC: Sum.No. 704, 2 Nov 55 - Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (16).

DURDYEV, B.

DURDYEV, B.

Reeling sild from cocoons with both hands. Tekst.prom. 14 no.6:
18-20 Je '54. (MLRA 7:7)

1. Glavnyy inzhener Chardshouskoy shelkomotal'noy fabriki.
(Silk manufacture)

DURDYEV, B.

Agglutination reaction in the trypanosomiasis of camels. Izv.
AN Turk.SSR. Ser.biol.nauk no.2:58-61 '63. (MIRA 16:5)

1. Turkmenskiy sel'skokhozyaystvennyy institut imeni M.I. Kalinina.
(CAMELS--DISEASES AND PESTS) (TRYPANOSOMIASIS)
(AGGLUTINATION)

DURDYEV, Kh.

Existence of the bi-integral. Izv. AN Turk. SSR. Ser. fiz.-tekhn.,
khim. i geol.nauk no.6:103-104 '63.

Definition and properties of the double bi-integral. Ibid.:104-109
(MIRA 18:1)

1. Fiziko-tekhnicheskoy institut AN Turkmenskoy SSSR.

L 05733-67 EMT(d) IJP(c)

ACC NR: AP6016931

SOURCE CODE: UR/0202/65/000/006/0025/0032

AUTHOR: Durdyev, Kh.

ORG: Physico-Technical Institute, AN Turkmen SSR (Fiziko-tekhnicheskiy institut AN Turkmeniskoy SSR)

TITLE: Application of the bi-integral to the approximate solution of boundary value problems of ordinary differential equations

SOURCE: AN Turkmen SSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh i geologicheskikh nauk, no. 6, 1965, 25-32

TOPIC TAGS: boundary value problem, ordinary differential equation, linear equation, initial value problem, mathematic determinant, eigenvalue

ABSTRACT: A k-tuple n-th order bi-integral is defined as an extension of the bi-integral of I. S. Arzhanykh (DAN UzSSR, No. 11, 1960). It is given that the n-th order differential equation

$$y^{(n)} = f(x, y, y', \dots, y^{(n-1)})$$

with boundary conditions

$$U_i[y(x_0), y'(x_0), \dots, y^{(n-2)}(a), y^{(n-1)}(a)] = 0, \\ i = 1, 2, \dots, n$$

has a solution on the segment $[x_0, a]$. The general case of application of the